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IS 2014 (1996): T-bolts [PGD 2: Machine Tool Elements and Holding Devices]

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“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
टी-काबले — विशिष्टि
(दूसरा पुनरीक्षण)

Indian Standard
T-BOLTS — SPECIFICATION
(Second Revision)

ICS 21.060.10

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

October 1996

Price Group 2

Machine Tool Elements and Holding Devices Sectional Committee, PE 02

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Machine Tool Elements and Holding Devices Sectional Committee had been approved by the Production Engineering Division Council.

This standard was originally issued in 1962. The first revision of this standard was issued in 1977. In the second revision of this standard the following changes have been made:

a) Table 1 has been modified, and
b) Approximate mass of the bolts has been specified.

While revising this standard considerable assistance has been derived from ISO 299:1987 'Machine tool tables — T-slots and corresponding bolts' issued by International Organization for Standardization (ISO) and DIN 787-1991 'Tee bolts' issued by Deutsches Institut für Normung (DIN).

The guiding surfaces of width '*a*' are provided for the purpose to prevent rotation when the bolts are tightened and slackened and at the same time they ensure, as far as possible, that the T-slots are not chipped out or broken.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2:1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard
T-BOLTS — SPECIFICATION
(Second Revision)

1 SCOPE

This standard covers the requirements for T-bolts for T-slots according to IS 2013:1995 'T-slots — Dimensions and spacing (*third revision*)' provided in machine tools and similar other applications.

2 REFERENCES

2.1 The following standards contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No	*Title*
1367 (Part 1): 1980	Technical supply conditions for threaded steel fasteners : Part 1 Introduction and general information (*second revision*)
1367 (Part 2): 1979	Technical supply conditions for threaded steel fasteners : Part 2 Product grades and tolerances (*second revision*)
1367(Part 3): 1991	Fasteners — Threaded steel — Technical supply conditions : Part 3 Mechanical properties and test methods for bolts, screws and studs with full loadability (*third revision*)
1367(Part 18): 1979	Technical supply conditions for threaded steel fasteners : Part 18 Marking and mode of delivery (*second revision*)
1368:1987	Dimensions for ends of parts with external ISO metric threads (*third revision*)
1369(Part 1): 1993	Fasteners — Thread run-outs and undercuts : Part 1 Dimensions for screw thread run-outs for external ISO metric threads (*third revision*)
2013:1995	T-slots — Dimensions and spacing (*third revision*)

3 DIMENSIONS

3.1 The dimensions of T-bolts shall be as given in Table 1.

3.1.1 The grade and tolerances on the dimensions for T-bolts shall be those specified for Grade A of IS 1367 (Part 2).

4 MECHANICAL PROPERTIES

4.1 The mechanical properties for T-bolts shall conform to those given under property class 8.8 of IS 1367 (Part 3).

5 GENERAL REQUIREMENTS

5.1 T-bolts shall comply with the requirements of IS 1367 (Part 1) as far as manufacture and workmanship is concerned. Marking and mode of delivery shall be in accordance with IS 1367 (Part 18).

6 DESIGNATION

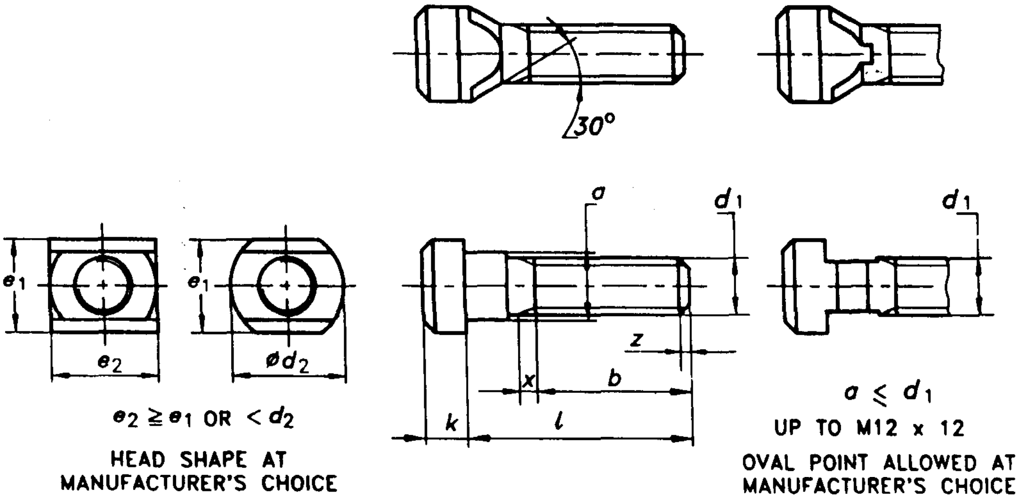
6.1 T-bolt of nominal size=22 mm, length l = 125 mm and d_1 = M20 shall be designated as :

T-bolt IS 2014 — 22 × 125 × M20

Table 1 Dimensions for T-Bolts

(*Clause* 3.1)

All dimensions in millimetres.


30°
a
d_1
d_1
e_1
e_1
e_2
$\varnothing d_2$
z
x
b
k
l
$e_2 \geq e_1$ OR $< d_2$
HEAD SHAPE AT MANUFACTURER'S CHOICE
$a \lesssim d_1$
UP TO M12 x 12
OVAL POINT ALLOWED AT MANUFACTURER'S CHOICE

'z' according to IS 1368.

'x' according to IS 1369 (Part 1).

Nominal Size	d_1	a	Tol on a	l	b	d2	e_1	Tol on e_1	k	Tol on k	Mass g/piece
5	M 5	5	-0.3 -0.5	25 40	18 30	10	9	0 -0.5	2.5	0 -0.3	5 6
6	M 6	6		25 40 63	15 28 40	12	10		4	0 - 0.5	10 12 18
8.	M 8	8		32 50 80	22 35 50	16	13		6		20 25 40
10.	M 10	10		40 50 63 80 100	30 30 45 40 60	20	15		6		40 44 48 60 70
12	M 12	12	-0.3 -0.6	50 63 80 100 125 160 200	35 40 55 50 75 80 120	25	18		7		60 65 75 90 120 145 180
14	M12	14		50 63 80 100 125 160 200	35 40 55 50 75 80 120	28	22		8		70 80 100 110 120 150 180
16	M 16	16		63 80 100 125 160 200 250	45 55 65 80 100 125 150	32	25		9		140 160 200 220 260 315 360

Table 1 *(Concluded)*

Nominal Size	d_1	*a*	Tol on *a*	*l*	*b*	d2	e_1	Tol on e_1	*k*	Tol on *k*	Mass g/piece
18	M 16	18	-03 -0.6	63	45	36	28	0 -0.5	10	0 -0.5	160
				80	55						185
				100	65						220
				160	100						300
				200	125						350
				250	150						430
20	M 20	20		80	55	40	32		12		290
				100	65						340
				125	85						390
				160	110						470
				200	125						550
				250	150						670
				315	190						800
22	M 20	22		80	55	45	35		14		340
				100	65						400
				125	85						440
				160	110						500
				200	125						570
				250	150						680
				315	190						810
24	M 24	24		100	70	50	40		16		540
				125	85						640
				160	110						770
				200	125						900
				250	150						1 040
				315	190						1 270
				400	240						1 410
28	M 24	28	-0.4 -0.8	100	70	56	44	0 -1	18	0 -1	650
				125	85						720
				160	110						800
				200	125						950
				250	150						1 120
				315	190						1 350
				320	240						1 490
36	M 30	36		125	80	70	54		22		1 250
				160	110						1 440
				200	135						1 630
				250	150						1 920
				315	200						2 300
				500	300						3 300
42	M 38	42		160	100	82	65		26		2 200
				250	175						2 820
				400	250						3 930
				600	340						5 480
48	M 42	48		160	100	95	75		30		3 400
				250	175						4 300
				400	250						5 800
54	M 48	54		200	130	110	85		34		5 300
				315	220						6 000
				500	300						9 200

NOTE — For slot dimensions, refer IS 2013.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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